A 57.46/3: 4/954

Federal - State Cooperative
Snow Surveys and Water Supply Forecasts
for

Montana and Northern Wyoming
Upper Missouri, Upper Columbia and Yellowstone Rivers

STATE DOCUMENTS
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UNITED STATES DEPARTMENT OF AGRICULTURE
AND
MONTANA AGRICULTURAL EXPERIMENT STATION

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In cooperation with the U. S. Forest Service, U. S. Geological Survey, National Park Service, U. S. Bureau of Reclamation, State Engineers of Montana and Wyoming and other Federal, State and local organizations.

AS OF
APR. 1, 1954

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UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

TO RECIPIENTS OF COOPERATIVE SNOW SURVEY
AND WATER SUPPLY FORECAST REPORTS:

Forecasts by U. S. Weather Bureau of total annual streamflow October-September, inclusive, at more than 300 gaging stations are issued monthly January through May in the publication WATER SUPPLY FORECASTS FOR THE WESTERN UNITED STATES.

Weather Bureau forecasts of runoff presented in that bulletin are computed from procedures based on mathematical analysis of the relation between precipitation and runoff.

The Weather Bureau bulletins may be secured by writing to:

Hydrologist in Charge
River Forecast Center
U. S. Weather Bureau
712 Federal Office Building
Kansas City 6, Missouri

For current information on local river and flood conditions, reference should be made to the appropriate River District Office, listed below:

Meteorologist in Charge................. Weather Bureau Office Box 1705 Helena, Mont.	Missouri River and tributaries above Fort Peck Dam; Milk River
Meteorologist in Charge................. Weather Bureau Airport Station Box 1338 Billings, Mont.	Yellowstone River and tributaries.
Meteorologist in Charge................. Weather Bureau Airport Station R.F.D. #1 Spokane, Washington	Columbia River and tributaries above and including Grand Coulee Dam.

State of Montana

FEDERAL - STATE COOPERATIVE SNOW SURVEYS
AND
WATER SUPPLY FORECASTS

FOR
MONTANA AND NORTHERN WYOMING
(Upper Missouri and Upper Columbia River Basins)

Report issued by:

Truman C. Anderson
State Conservationist
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M. M. Kelso
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Agricultural Experiment Station

Report Prepared by:

A. R. Codd
Hydraulic Engineer
Soil Conservation Service

and

O. W. Monson
Irrigation Engineer
Montana Agricultural Experiment Station

Soil Conservation Service
U. S. Department of Agriculture
and
Montana Agricultural Experiment Station
Bozeman, Montana

WATER SUPPLY OUTLOOK
FOR SEASON 1954
AS OF APRIL 1, 1954

The 1954 snow-pack over the Upper Missouri Basin in Montana is equal to the fifteen year average. The one exception is on the Marias, Teton and Sun Rivers. These streams appear to reflect the extremely high snow-pack of the Columbia River Basin.

The snow-pack over the Yellowstone River Basin through Montana is approximately 115% average, and should produce a fair water supply from April through September.

Over the Columbia River Basin in Montana, the snow-pack is exceptionally heavy this season.

The Kootenai River Basin on the far north has a record breaking snow-pack and a flood potential exists.

JEFFERSON RIVER:

April 1 snow surveys on the upper tributaries on the Jefferson River in Beaverhead County show a slightly below average water content this season. It is estimated that the Beaverhead River at Barratts will flow 171,000 acre feet of water from April through September, or 84% average. The Big Hole River near Melrose will flow approximately 674,000 acre feet, or 82% average, with the Jefferson River at Sappington producing 1,058,000 acre feet during the irrigation season.

MADISON RIVER:

The snow-pack this season on the Madison River is very close to average and should produce a fair water supply from April through September.

GALLATIN RIVER:

The 1954 snow-pack over the Gallatin River is slightly higher than the other two rivers that make up the Missouri. It is anticipated that the snow-pack will produce approximately 529,000 acre feet of water from April through September, or 105% average. The peak discharge of the Gallatin River at Gateway should be approximately 4,690 sec. ft. More reliable data on this peak discharge and subsequent discharges during May and June will be released at a later date.

GALLATIN RIVER (continued)

Middlecreek (Hyalite): The snow cover on this basin is roughly 103% average and it is anticipated that the seasonal flow from April through September will be 33,700 acre feet of water or 91% average, with a peak discharge in the neighborhood of 331,000 acre feet of water. More information will be released at a later date relative to the estimated size of the peak discharge and subsequent sec. ft. flow figures during May, June and July.

MISSOURI RIVER MAIN STEM:

The Missouri River Main Stem from Toston to Fort Benton, which covers several tributaries, has a snow-pack average slightly above average, while the water supply forecasts for the several stations in this reach of the river indicate a slightly below average runoff which is a natural conclusion in this section of the river. The Sun, Teton and Marias Rivers have an exceptionally high snow-pack. On the Sun River alone, the snow-pack is the greatest on record for the past 15 years.

At the Goat Mountain snow survey course, which is measured by the U. S. Geological Survey, the snow is 57" deep with 18" of water content. The 15 year average water content on this snow survey course is 10.3 inches.

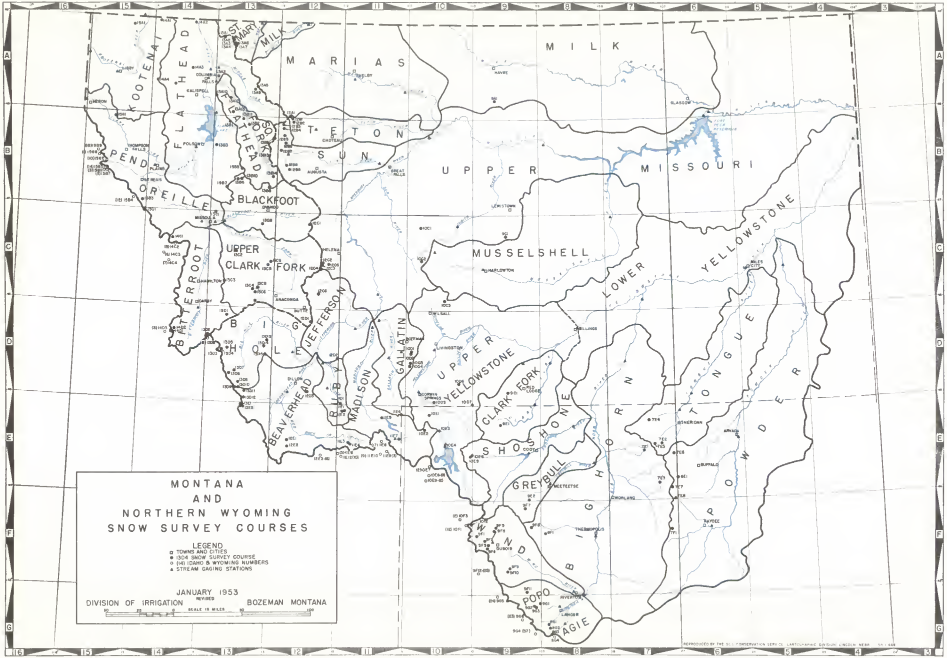
At Benchmark Ranger Station, the snow is 48" deep with 17.5" of snow. When this record is compared with the six year average of 10.9 " of water, the conclusion is reached that there is going to be an exceptionally high runoff from the snow-pack this season on the Sun River. Converting these snow survey figures into stream-flow runoff for the April-September period, the Sun River at Vaughn should flow 591,000 acre feet of water for the period, or 131% average.

The Marias River and the Teton River have equally high snow cover and the runoff from snow feeding these streams should be dangerously high this season. There is a potential flood hazard existing on these three streams this season.

UPPER YELLOWSTONE:

The snow cover on the Upper Yellowstone River through Montana should produce a fair water supply this season. There is more snow in the mountains this season that last season, but not as much as 1952. The Yellowstone River at Corwin Springs should produce 1,900,000 acre feet of water from April through September or 97% average. This figure is slightly higher than last year. Other downstream stations should indicate approximately the same percentage. The Clark Fork River of the Yellowstone will flow considerably less in percentage than other tributary basins. Snow survey figures indicate that this stream will flow 512,000 acre feet of water from April through September or 83% average.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE



MONTANA
AND
NORTHERN WYOMING
SNOW SURVEY COURSES

LEGEND
- ◻ TOWNS AND CITIES
- ● 1304 SNOW SURVEY COURSE
- ○ (14) IDAHO & WYOMING NUMBERS
- ▲ STREAM GAGING STATIONS

JANUARY 1953
REVISED

DIVISION OF IRRIGATION BOZEMAN MONTANA

SCALE IN MILES

REPRODUCED BY THE SOIL CONSERVATION SERVICE CARTOGRAPHIC DIVISION LINCOLN NEBR 5R-1-448

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

INDEX TO MONTANA & NORTHERN WYOMING SNOW COURSES

MISSOURI RIVER DRAINAGE

Drainage Basin and Course Name	Montana Number	Elev.	Location Sec. Lat.	Twp.	Range Long.	Record Began	Measuring Dates[a]	Measured By:[b]
JEFFERSON RIVER								
(ROCK-BEAVERHEAD)								
Lakeview Ridge	11E3	7400	27	14S	2W	1948	[illegible]	9
Lakeview Canyon	11E4	6930	26	14S	2W	1948	[illegible]	9
Limekiln	12E2	6950	5	15S	9W	1948	3,4	1
White Pine Ridge	12E1	8850	[illegible]	14S	9W	1948	3,4	1
(HORSE PRAIRIE)								
Bloody Dick	13D10	7600	1	8S	16W	1948	3,4	1
Cold Stone	13D9	8100	11	8S	16W	1948	3,4	1
Lemhi Pass	13E1	7480	9	10S	15W	1948	3,4	1
Terrell Creek	13D12	6650	14	9S	15W	1948	3,4	1
Trail Creek	13E2	7090	15	10S	15W	1948	3,4	1
Selway Junction	13D11	6800	27	8S	15W	1948	3,4	1
(BIG HOLE)								
Big Hole Pass	13D3	7440	28	3S	18W	1948	3,4	1
Big Hole Pass (Below)	13D4	6900	24	3S	18W	1948	3,4	1
East Boundary	13D5	6700	22	3S	17W	1948	3,4	1
Gibbons Pass	13D2	7100	4	2S	19W	1934	1,2,3,4,5	1,2
Jahnke Creek	13D6	7340	25	7S	16W	1948	3,4	1
Miner Forks	13D6	7300	24	6S	17W	1949	3,4	1
Miner Lake	13D7	6720	10	6S	16W	1945	3,4,5	1
(WISE RIVER)								
Anderson Mdw.	13D14	7000	18	3S	12W	1948	3,4	1
Elk Horn	13D15	8450	15	4S	12W	1934	3,4,5	2
Wise River	13D13	6300	15	2S	12W	1948	3,4	1
(RUBY RIVER)								
Cottonwood	11E2	5900	24	10S	3W	1948	3,4	1
Cottonwood (Upper)	11E1	8400	30	10S	2W	1948	3,4	1
Flashlight	12D3	6950	22	8S	7W	1945	3,4,5	1
Tobacco Root	12D2	6900	13	4S	4W	1948	3,4	1
Vigilante	11D1	6125	28	9S	3W	1948	3,4	1
MADISON RIVER								
Hebgen	11E5	6550	22	11S	3E	1934	1,2,3,4,5	[illegible]
West Yellowstone	11E7	6700	34	13S	5E	1934	1,2,3,4,5	[illegible]
Norris Basin	10E2	7500	44°-44'		110°-42'	1935	3,4	[illegible]
GALLATIN RIVER								
Devil's Slide	10D4	8100	14	5S	6E	1935	[illegible]	[illegible]
Wood Meadow	10D3	6600	22	4S	6E	1934	[illegible]	2,6
Mystic Lake	10D2	6600	30	3S	7E	[illegible]	2,3,4	[illegible]
New World	10D1	6700	24	3S	6E	[illegible]	1,2,3,4,5	[illegible]
21-Mile	11E6	7150	1	11S	5E	[illegible]	1,2,3,4,5	[illegible]
MISSOURI RIVER MAIN STEM								
Cheesman Reservoir	12C5	6200	2	8N	5W	[illegible]	1,2,3,4,5	[illegible]
Crystal Lake	9C1	6100	24	12N	17E	1942	3,4	[illegible]
Grasshopper	10C2	7000	19	9N	8E	[illegible]	3,4	[illegible]
Kings Hill	10C1	7950	35	13N	7E	[illegible]	3,4,5	[illegible]
Picnic Grounds	12C6	6500	22	5N	6W	1940	2,3,4	[illegible]
Pipestone Pass	12D1	7200	11	1N	7W	1938	2,3,4,5	[illegible]
Stemple Pass	12C1	6900	16	13N	7W	1934	3,4,5	[illegible]
Ten Mile Creek, Lower	12C2	6250	13	8N	6W	1935	1,2,3,4,5	[illegible]
Ten Mile Creek, Middle	12C3	6800	13	8N	6W	1934	1,2,3,4,5	[illegible]
Ten Mile Creek, Upper	12C4	8000	19	8N	5W	1935	1,2,3,4,5	[illegible]
(TETON RIVER)								
Freight Creek	12A1	6000	13	26N	10W	1948	3,4	1
Waldron Creek	12B2	5600	16	25N	9W	1948	3,4	1
West Fork	12B1	6000	6	25N	9W	1948	3,4	1
(SUN RIVER)								
Bench Mark	12B8	5500	9	20N	10W	1948	3,4	1
Cabin Creek	12B6	5400	33	23N	10W	1949	3,4	1
5-Bull	12B9	5600	36	20N	10W	1948	3,4	1
Gates Park	12B5	5300	31	24N	10W	1949	3,4	1
Goat Mountain	12B7	7000	20	22N	10W	1934	3,4	[illegible]
My Lake	13B9	7300	21	23N	12W	1950	3,4	1
Wrong Creek Ridge	12B3	6800	17	25N	10W	1949	3,4	1
Wrong Creek	12B4	5700	32	25N	10W	1949	3,4	1
(MARIAS RIVER)								
Marias Pass	13A5	5250	34	30N	14W	1936	1,2,3,4,5	2
(MILK RIVER)								
Rocky Boy	9A1	5200	15	28N	16E	1941	3,4	
(MUSSELSHELL RIVER)								
Grasshopper	10C3	7000	19	9N	8E	1938	3,4	1
(UPPER YELLOWSTONE)								
Camp Senia	9E1	7890	2	8S	18E	1937	4	1
Canyon	10E3	7750	44°-44'		110°-30'	1938	1,2,3,4,5	12
Cooke City	10E7	7400	25	9S	14E	1937	1,2,3,4,5	[illegible]
Crevice Mt.	10D5	8400	29	9S	9E	1935	3,4	1
Independence	10D6	8000	22	7S	12E	1941	3,4	12
Lake Camp	10E4	7850	44°-34'		110°-24'	1937	1,2,3,4,5	12
Lupine Creek	10E1	7300	44°-54'		110°-37'	1938	1,2,3,4,5	5
(SHIELDS RIVER)								
Porcupine	10C3	6500	10	4N	10E	1938	3,4	1
LOWER YELLOWSTONE								
(Wind River) Wyoming								
Brooks Lake #3	10F2	9200	23	44N	110W	1939	2,3,4,5	12
Burroughs Creek	9F6	8800	15	43N	107W	1948	2,3,4,5	12
Dinwoodie	9F10	10000	9	39N	105W	[illegible]	2,3,4,5	12
Dry Creek	9F9	9500	34	4N	6W	1948	2,3,4,5	12
DuNoir	9F2	8750	27	42N	108W	[illegible]	2,3,4,5	12
Geyser Creek	9F3	8500	12	41N	108W	1948	2,3,4,5	12
Hobbs Park	9G2	10000	22	2S	3W	1948	2,3,4,5	12
Little Warm	9F4	9500	24	41N	108W	1948	2,3,4,5	12
Mosquito Park R.S.	9G3	9500	23	2S	3W	[illegible]	2,3,4,5	12
Sheridan R.S.	9F1	7500	3	42N	109W	[illegible]	2,3,4,5	12
St. Lawrence R.S.	9F11	9000	26	1N	4W	[illegible]	2,3,4,5	12
T-Cross Ranch	9F5	8000	1	43N	107W	1940	2,3,4,5	12
Trout Creek	9G1	8400	5	2S	2W	1948	2,3,4,5	12
Togwotee Pass	10F1	9600	29	44N	110W	1936	2,3,4,5	10
(Popo Agie River) Wyoming								
Blue Ridge	8G2	9500	23	31N	101W	1939	2,3,4,5	12
Grannier Meadows	8G4	9000	19	30N	100W	1936	2,3,4,5	12
Larsen Creek	9G4	9000	12	30N	103W	1948	3,4,5	12
Sawmill Glade	8G1	8500	3	31N	101W	1939	2,3,4,5	12
South Pass	8G3	9000	13	30N	101W	1939	2,3,4,5	12

MISSOURI RIVER DRAINAGE CONT.

Drainage Basin and Course Name	Montana Number	Elev.	Location Sec. Lat.	Twp.	Range Long.	Record Began	Measuring Dates[a]	Measured By:[b]
BIG HORN RIVER Wyoming								
Beavers Mill	9F8	8900	6	43N	102W	1948	2,3,4,5	12
Owl Creek	8F1	8700	36	43N	101W	1948	2,3,4,5	12
Tensleep R.S.	7E3	8300	30	49N	86W	1935	4,5	1
Timber Creek	9E2	8800	25	47N	103W	1948	4,5	12
Ranger Creek	7E1	8800	32	53N	88W	1935	4,5	1
Wood River	9F7	8000	28	46N	103W	1939	2,3,4,5	12
(SHOSHONE RIVER) Wyoming								
East Entrance	10E6	7000	17	52N	109W	1948	1,2,3,4,5	5
Sylvan Pass	10E5	7100	12	52N	110W	1936	1,2,3,4,5	5
TONGUE RIVER Wyoming								
Big Goose	7E2	7700	4	53N	86W	1945	2,3,4,5	1
Burgess Ranger Sta.	7E4	7900	36	56N	89W	1950	2,3,4,5	12
Dome Lake	7E5	8800	11	53N	87W	1950	2,3,4,5	12
Lodgepole	9E1	8200	32	56N	106W	1940	4,5	1
POWDER RIVER								
North Powder	7E8	8500	5	47N	85W	1951	2,3,4,5	12
Muddy Pass	7E7	9700	11	48N	85W	1950	2,3,4,5	1
Soldier Park	7E6	8700	36	51N	85W	1950	2,3,4,5	12
Sour Dough	6E1	8500	17	49N	84W	1936	2,3,4,5	1
Red Fork	7E1	7000	18	43N	85W	1936	2,3,4,5	12

COLUMBIA RIVER BASIN

Drainage Basin and Course Name	Montana Number	Elev.	Location Sec. Lat.	Twp.	Range Long.	Record Began	Measuring Dates[a]	Measured By:[b]
KOOTENAI RIVER								
Baree Mountain	15B1	6000	1	25N	31W	1937	4,5	1
Blue Bird Basin	14A1	6800	24	37N	26W	1937	4,5	1
Red Mountain	15A1	6000	4	36N	29W	1937	3,4,5	1
FLATHEAD RIVER								
Basin Creek	13B14	5000	11	19N	12W	1951	2,3,4,5	1
Big Creek	13B3	6750	6&7	22N	18W	1941	3,4,5	4
Brush Creek	14A4	5000	13	30N	26W	1937	3,4,5	1
Cattle Queen	13A1	4700	7	35N	17W	1939	3,4,5	5
Desert Mountain	13A2	5600	24	31N	19W	1937	1,2,3,4,5	1
HellRoaring Divide	14A3	5770	35	32N	22W	1942	3,4,5	1
Holbrook	13B13	4530	18	21N	13W	1951	1,2,3,4,5	1
Kishenehn	14A2	4300	7	37N	21W	1946	4,5	5
Limestone Pass	13B8	7000	28	18N	12W	1948	3,4,5	1
Logan Creek	14A5	4300	34	30N	24W	1937	3,4,5	1
Marias Pass	13A5	5250	34	30N	14W	1934	1,2,3,4,5	2
Snow Lab. #16	13A9	5270	15	29N	14W	1946	1,2,3,4,5	2
Spotted Bear Mt.	13B2	7000	23	25N	15W	1948	3,4,5	1
Strawberry Lake	13A10	6500	11	28N	19W	1948	3,4,5	1
Trinkus Lake	13B1	6500	9	25N	17W	1948	3,4,5	1
Trout Lake #2	13A12	3600	21	28N	17W	1948	3,4,5	1
Upper Holland Lake	13B5	7000	28	20N	16W	1948	3,4,5	1
Twin Creeks	13B11	3580	14	26N	16W	1951	2,3,4,5	1
Quintonkon	13A13	3800	11	26N	17W	1951	2,3,4,5	1
Coyote Hill	13B10	4200	12	18N	16W	1951	1,2,3,4,5	1
El Dorado Mine	13C9	7800	23	8N	12W	1946	4	11
Gold Creek Lake	13C8	7200	14	8N	12W	1946	4	11
Intergaard	13C4	6450	6	5N	13W	1939	2,3,4	3
Lubrecht Forest	13C8	5400	31	14N	15W	1951	1,2,3,4,5	13
North Fork Jocko	13B7	6330	3	17N	17W	1941	3,4,5	4
Picnic Grounds	12C6	6500	22	5N	6W	1940	2,3,4	3
Pipestone Pass	12D1	7200	11	1N	7W	1938	2,3,4,5	1
Rainy Lake	13B6	4300	11	18N	16W	1947	3,4,5	1
Slide Rock Mountain	13C2	7100	26	10N	16W	1937	4	1
Southern Cross	13C5	6500	9	5N	13W	1939	2,3,4	3
Stemple Pass	13C1	6900	16	13N	7W	1934	3,4,5	2
Storm Lake No. 2	13C7	7780	19	4N	13W	1939	2,3,4	1
Stuart Mill	13C6	6500	19	5N	13W	1939	2,3,4	3
Stuart Mountain #1	13C1	7400	6	14N	18W	1936	4	1
PEND OREILLE RIVER								
Baree Mountain	13B1	6000	1	25N	31W	1937	4,5	1
Freezeout Summit #2	15B10	6800	21	15N	27W	1951	4	1
Hoodoo Creek	15C1	6200	9&16	14N	27W	1937	4	1
BITTERROOT RIVER								
East Fork Ranger Stn.	13D1	5400	16	2N	17W	1937	4	1
Gibbons Pass	13D2	7100	4	2S	19W	1934	1,2,3,4,5	1
Mud Creek Pasture	14C1	4500	24	11N	24W	1937	3	1
Nez Perce Camp	14D2	5580	19&20	1S	23W	1937	4	1
Nesperce Pass	14D1	6575	32	28N	16E	1937	4	1
Skalkaho Summit	13C3	7259	30	6N	17W	1937	4	1

SASKATCHEWAN RIVER BASIN

Drainage Basin and Course Name	Montana Number	Elev.	Location Sec. Lat.	Twp.	Range Long.	Record Began	Measuring Dates[a]	Measured By:[b]
ST. MARY RIVER								
Iceberg Lake	13A3	6000	48°-50'		113°-42'	1922	5	2,8
Piegan Pass #4	13A4	5000	48°-46'		113°-40'	1922	5	2,8
Piegan Pass #6	13A6	6500	48°-45'		113°-42'	1922	5	2,8
Mount Allen #7	13A7	7000	48°-44'		113°-40'	1922	5	2,8
Ptarmigan #8	13A8	5800	48°-50'		113°-42'	1922	5	2,8

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a. Numerals 1,2,3,4, and 5 refer to January 1, February 1, March 1, April 1, and May 1

b. Numerals refer to Agency that secures the snow survey as follows:

1. U.S. Forest Service
2. U.S. Geological Survey and U.S. Engineer Corps
3. Montana Power Company
4. U.S. Indian Service
5. National Park Service
6. Montana Experiment Station
7. City of Bozeman
8. Dominion Water and Power Bureau
9. U.S. Fish and Wildlife Service
10. U.S. Bureau of Reclamation
11. Deerlodge Citizens Committee
12. Soil Conservation Service
13. Montana State Forestry School

5,R-11,484-A

APRIL 1, 1954
FORECAST OF SEASONAL STREAM FLOW

UPPER MISSOURI RIVER IN MONTANA	Seasonal Stream Flow in Thousands of acre feet				
	FORECAST 1954	%	Measured runoff		10-Yr.
	April Sept.	10-yr. Avg.	April - Sept.* 1952	1953	Avg. 1942-51
RED ROCK RIVER					
Monida (near) (1) Kennedy Ranch (at)	85	97	69		87
BEAVERHEAD RIVER					
Barratts, Montana	171	84	222		203
BIG HOLE RIVER					
Melrose (near)	674	82	808		821
JEFFERSON RIVER					
Sappington (at)	994	84	1135		1185
MADISON RIVER					
West Yellowstone (near)	200	96	248	207	208
Garyling (near) (2)	423	94	563		445
McAllister (near) (3)	746	99	962		756
GALLATIN RIVER					
Gateway (near)	492	106	596	404	465
Logan (at)	557	100	745	442	506
MISSOURI RIVER					
Toston (at)	2192	90	2825		2427
Fort Benton (at) (5)	3627	96	3882		3767
Loma (5)	4448	98	4562		4542
Zortman	4856	98	5115		4920
Ft. Peck Dam (below) (5)	4790	98	5188		4852
Wolf Point (near) (5)			7015		5150
Williston, N.D.(nr.) (5)					
Bismark, N.D. (at) (5)					
SUN RIVER					
Vaughn (at) (4)	591	131	312		451
MARIAS RIVER					
Shelby (at)	667	122			
Brinkman (near)	678	108	533	628	
JUDITH RIVER					
Utica (near)	50	109	48	38	46
YELLOWSTONE RIVER					
Corwin Springs (at)	1900	97	2171	1600	1957
Livingston (near)	2192	97	2408		2267
Billings (at)	3913	90	4642		4344
Miles City (at)	6782	97	6265		7024
Sidney (near)	7094	98	6857		7266
SHIELDS RIVER					
Wilsall (near)	45	100	50		45
Clyde Park (at)	110	93	162		118
CLARK FORK RIVER					
Chance(at)	512	83	576		617
Edgar (at)	541	82	613		657
Hyalite Crk R. S.(at) (6)	33.7	91	41		37

(1) Observed flow plus change in storage in Lima Reservoir
(2) Observed flow plus change in storage in Hebgen Lake
(3) Observed flow plus change in storage in Hebgen & Ennis Lakes
(4) Observed flow plus change in storage in Gibson, Willow Crk and Pishkun Res.
(5) Observed flow plus change in storage in Canyon Ferry & Ft. Peck Reservoirs
(6) Observed flow plus change in storage in Hyalite Reservoir
* Preliminary data furnished by U.S. Geological Survey subject to revision

APRIL 1, 1954

FORECAST OF SEASONAL STREAM FLOW

MISSOURI RIVER BASIN YELLOWSTONE RIVER TRIBUTARIES in WYOMING	Seasonal Stream Flow in Thousands of acre feet				
	FORECAST 1954	%	Measured runoff		10-Yr.
	April Sept.	10-yr. Avg.	April - Sept.* 1952	1953	Avg. 1942-51
WIND RIVER					
Riverton (at) (6)	690	124	354		556
BIG HORN RIVER					
Thermopolis (at) (7)	1150	110	374		1046
Kane (at)	1580	106	767		1490
St. Xavier (near (8)	2320	102	1286		2769
BULL LAKE CREEK					
Bull Lake (Above)	180	89	214		202
Lenor (near)	170	117	--		145
POPO AGIE RIVER					
Riverton (near)	457	119	450		383
NORTH FORK POPO AGIE RIVER					
Lander (near) (9)	84	109	92		77
LITTLE POPO AGIE RIVER					
Hudson (at)	78	137	81		57
GREYBULL RIVER					
Meeteetse (at)	244	103	278		237
Basin (near)	116	103	173		113
SHOSHONE RIVER					
Buffalo Bill Dam (below)(10)	861	107	697		806
Byron (at) (10)	624	100	486		627
TONGUE RIVER					
Dayton (near)	122	104	104		117
Acme (near)	296	108	239		274
Decker (near) Mont. (11)	305	110	249		277
POWDER RIVER					
Arvado (at)	168	118	125		142
Moorehead (at) Montana	293	103	235		282
Locate (at) Montana	353	100	303		353
MIDDLE FORK POWDER RIVER					
Kaycee (near)	75	104	36		72
NORTH FORK POWDER RIVER					
Mayoworth (near)	19	100	17		19
CLEAR CREEK					
Buffalo (near)	36	92	35		39
Arvado (near)	109	87	100		126

(6) Observed flow plus storage in Bull Lake and Pilot Butte Reservoirs
(7) Observed flow plus storage in Boysen Reservoir
(8) Observed flow plus storage in Boysen and Buffalo Bill Reservoirs
(9) Observed flow plus storage in Bull Lake Reservoir
(10) Observed flow plus storage in Buffalo Bill Reservoir
(11) Observed flow plus storage in Tongue Reservoir
(*) Preliminary data furnished by U. S. Geological Survey subject to revision

APRIL 1, 1954

FORECAST OF SEASONAL STREAM FLOW

UPPER COLUMBIA RIVER IN MONTANA	Seasonal Stream Flow in Thousands of acre feet				
	FORECAST 1954	%	Measured runoff		10-Yr.
	April Sept.	10-Yr. Avg.	April - Sept.*		Avg.
			1952	1953	1942-51
CLARK FORK RIVER					
Bonner (above) (3)	771	90	833		855
Missoula (above)	1,844	102	1782		1809
Missoula (below)	3,452	104	3268		3334
St. Regis (at)	4,628	104	4318		4430
Plains (near) (4)	13,718	115	11551		11950
Cabinet Gorge (at) (4)	15,594	116	13000		13370
Z-Canyon (below) (8)	18,099	113	15501	15706	16067
BLACKFOOT RIVER					
Bonner (near)	1,073	113	948		944
BITTERROOT RIVER					
Darby (near)	622	107	608		582
At Mouth (6)	1,525	105	1486		1525
FLATHEAD RIVER					
Columbia Falls (near) N.Fk.	2,464	133			1851
Columbia Falls (at)(7)	7,543	125	5733	4924	6040
Polson (near) (4)	8,747	124	7034	7590	7051
MIDDLEFORK FLATHEAD RIVER					
West Glacier (near)	2,232	125	1682	2156	1791
SOUTH FORK FLATHEAD RIVER					
Columbia Falls (near) (7)	2,710	120	2067	2290	2247
PRIEST RIVER					
Priest River (near)	1,038	113	864	880	915
SWAN RIVER					
Big Fork (at)	682	114			595

(3) Difference in observed flow, Clark Fork above Missoula & Blackfoot at Bonner
(4) Observed flow plus change in storage in Flathead Lake & Hungry Horse Reservoir
(6) Difference in observed flow, Clark Fork above and below Missoula
(7) Observed flow plus change in storage in Hungry Horse Reservoir
(8) Observed flow plus change in storage in Hungry Horse, Flathead & Pend Oreille Lk
(*) Preliminary data furnished by U. S. Geological Survey, subject to revision

COMPARISON OF SNOW COVER WITH THAT OF PREVIOUS YEARS

Summary of Snow Survey Data by Tributary Watersheds as of April 1, 1954

TRIBUTARY BASINS	No. of Courses Averaged	No. Years Record	1954 Snow Water Equivalent expressed as Percent of		
			1953%	1952%	AVERAGE %
MISSOURI RIVER BASIN IN MONTANA					
JEFFERSON					
Rock-Beaverhead	4	6	85	67	80
Horse Prarie	6	6	86	88	86
Big Hole	7	6-15	89	83	95
Wise River	3	6-15	100	83	101
Ruby River	5	6-9	87	69	86
MADISON	6	17-18	109	63	107
GALLATIN	5	15-17	108	70	101
MISSOURI MAIN STEM	8	15-18	109	93	109
Teton River	3	6	129	139	132
Sun River	3	5-15	207	136	163
Marias River	1	18	170	138	163
Milk River	1	12	135	122	115
Musselshell	3	13-16	134	84	114
UPPER YELLOWSTONE (MONTANA)	7	12-19	120	86	115
Shields River	2	15	116	76	125
LOWER YELLOWSTONE, WYOMING					
Shoshone	2	5-16	127	92	102
Wind River	14	4-18	125	106	109
Popo Agie	6	5-17	168	89	136
Owl Creek on the Big Horn River					
Wood River on Greybull River	2	5-14	178	150	127
Tongue River	3	3-18	145	151	149
Clear Creek on the Powder River	2	4-17	196	118	136
Crazy Woman Crk on Powder River	3	3-17	138	94	115
COLUMBIA RIVER BASIN IN MONTANA					
KOOTENAI RIVER, above Libby, Mont.	15	6-17	140	141	149
FLATHEAD RIVER	21	3-18	145	107	115
UPPER CLARKFORK	15	3-18	101	87	105
BITTERROOT	8	15-17	105	87	114
PEND OREILLE	5	15-17	128	130	144

STATUS OF RESERVOIR STORAGE APRIL 1, 1954

BASIN & STREAM	RESERVOIR	USEABLE CAPACITY (M.A.F.)	THOUSAND ACRE FEET IN STORAGE				
			MARCH 31				10-yr avg
			1954	1953	1952	1951	1942-51
MISSOURI RIVER BASIN							
Beaverhead	Lima	84.00	18.0	41.6	35.6	48.3	40.5
Ruby River	Ruby						
Madison Riv	Hebgen Lk	345.00	170.2	191.6	225.2	232.4	284.9
Madison Riv	Ennis Lk	41.00	35.7	29.2	38.7	36.0	34.8
Hyalite Crk	Missle Crk	8.03	4.2	5.0	--	--	New
Missouri Riv	Canyon Ferry	401.70	413.6	40.1	20.5	20.9	31.5
Missouri Riv	Hauser Lk (Inc. Lk Helena)	62.50	56.2	23.9	38.0	38.9	42.9
Missouri Riv	Lk Helena	10.45	8.3	0.4	3.0	3.2	7.8**
Missouri Riv	Holter Lk	81.92	59.1	38.9	37.6	74.4	52.9
N.Fk.Sun Riv	Gibson	105.00	77.5	58.4	67.0	80.6	56.2
N.Fk.Sun Riv	Willow Crk	32.30	27.0	21.4	25.5	26.0	13.1
N.Fk.Sun Riv	Pishkun	32.00	20.5	17.5	23.0	18.9	18.4
Teton Riv	Bynum						
Birch Crk	Swift	30.00	24.8	13.6	25.3	30.0	25.0
Dupuyer & Birch Crk	Lk Francis	112.00	92.3	97.9	94.1	96.5	91.1
Judith Riv	Ackley Lk	5.82		--	3.7	4.9	4.5
Missouri Riv	Ft. Peck	19,000.00	12,180.0	12,750.0	12,390.0	12,960.0	11,011.8
Milk Riv	Fresno	127.20	86.1	85.9	147.7	99.9	71.2
Milk Riv	Nelson	66.80	38.1	29.7	37.0	15.7	28.2
W.Rosebud Crk	Mystic Lk	20.80	6.1	4.6	4.6	5.2	6.0
Red Lodge Crk	Cooney	27.50		32.0	13.4	14.0	16.8
Tongue Riv	Tongue Riv	73.90	7.1	18.0	39.1	9.0	18.6
Swiftcurrent	Sherburne Lk	66.10		18.9	19.6	30.8	25.6
** 9 year average ending 1954							
MISSOURI RIVER BASIN - WYOMING							
Shoshone Riv	Buffalo Bill	440.00	147.8	154.8	202.3	269.1	280.9
Wind Riv	Boysen	758.00	382.1	495.0	152.4	--	New
Wind Riv	Pilot Butte	31.6	17.7	23.5	13.6	13.8	16.9
Bull Creek	Bull Lk	152.00	69.3	56.0	61.2	79.5	59.9
Belle Fourche	Key Hole	190.00	8.6	13.8	1.3	0.0	0.0
MISSOURI RIVER BASIN - NORTH DAKOTA							
Hart River	Hart Butte	54.80	56.2	55.9	--	--	New
Hart River	Dickerson	4.3	5.7	3.3	--	--	New
MISSOURI RIVER BASIN - SOUTH DAKOTA							
Belle Fourche	Belle Fourche	185.00	120.4	65.6	117.8	94.3	134.3
Cheyenne River	Angostura	92.00	32.7	50.6	41.0	0.0	0.0
Cheyenne River	Deerfield	15.1	15.1	13.9	15.1	14.1	13.4
Grand River	Shadehill	84.00	82.6	84.2	0.0	0.0	0.0

STATUS OF RESERVOIR STORAGE APRIL 1, 1954

BASIN & STREAM	RESERVOIR	USEABLE CAPACITY (M.A.F.)	THOUSAND ACRE FEET IN STORAGE				
			MARCH 31				10-yr avg 1942-51
			1954	1953	1952	1951	
COLUMBIA RIVER BASIN							
Flint Crk	Georgetown Lk	31.00	20.4	23.8	20.9	19.9	22.4
Rock Crk	Como Lk	34.80	5.9	5.6	13.6	9.9	14.9
S.Fk.Flathead	Hungry Horse	3,500.00	1,947.0	719.7	65.4	--	New
Flathead Riv	Flathead Lk	1,791.00	616.1	641.0	572.3	651.6	593.2
Little Bitterroot*	Little Bitterroot	36.10	19.5	30.8	36.1	35.7	16.0
Dry Fork Crk**	Dry Fork	6.70	3.9	5.0	4.8	5.1	3.2
Flathead Irr. Project***	Mission Valley	98.60	20.6	36.2	49.9	52.5	40.3
Jocko Crk	Lwr Jock Lk	7.6	Sno Bnd	Snow Bound			
Clark Fork	Pend Oreille Lk			343.6	337.7	449.2	381.4

* Sum of two reservoirs on Little Bitterroot
** Sum of two reservoirs on Dry Fork Creek
*** Sum of (8) eight reservoirs on Project

MONTANA SNOW SURVEYS APRIL 1, 1954

			SNOW COVER MEASUREMENTS						
			1954			Past Record			
						Water Content (In.)			
MISSOURI BASIN DRAINAGE BASIN and SNOW COURSE	No.	Elev.	Date of Survey	Snow Depth (In.)	Water Content (In.)	1953	1952	Average	Years of Record
JEFFERSON RIVER									
(Rock-Beaverhead)									
Lakeview Ridge	11E3	7400	4/1	33	8.5	9.8	11.1	10.4	6
Lakeview Canyon	11E4	6930	4/1	40	8.7	10.4	14.6	11.8	6
Limekiln	12E2	6950	3/11	8	1.0	2.4	2.8	2.2	6
White Pine Rdg	12E1	8850	3/11	33	6.8	7.0	8.7	7.0	6
*Kilgore	11E12	6200				7.2	17.1	10.9	17
*Camp Creek	12E3	6800	3/28	35	10	10.6	23.7	9.9	18
*Blue Ldg Mine	11E11	6700				15.2	29.7	16.6	16
(Horse Prarie)									
Bloody Dick	13D10	7600	3/15	38	11.2	14.2	11.8	13.1	6
Gold Stone	13D9	8100	3/15	41	14.4	19.0	16.6	17.2	6
Lemhi Pass	13E1	7400	3/12	28	7.6	8.2	11.5	10.6	6
Terrell Creek	13D12	6650	3/12	14	4.6	5.1	5.0	4.9	6
Trail Creek	13E2	7090	3/12	30	9.0	8.1	8.8	9.3	6
Selway Junction	13D11	6800	3/12	32	9.2	11.0	9.8	9.9	6
(Big Hole)									
Big Hole Pass	13D3	7440	3/16	50	18.7	19.3	23.4	20.2	6
Big Hole Pass(B1)	13D4	6900	3/16	42	13.6	16.5	17.4	16.5	6
East Boundary	13D5	6700	3/16	23	7.2	10.3	9.6	10.1	6
Gibbons Pass	13D2	7100	3/30	69	24.6	28.0	32.4	23.8	15
Jahnke Creek	13D8	7340	3/15	39	12.2	14.4	13.3	12.7	6
Miner Forks	13D6	7300	3/14	44	13.6	14.4	14.4	13.6	6
Miner Lake	13D7	6720	3/14	32	9.8	9.6	9.9	8.7	9
*Moose Creek	13D16	6200	4/2	47	17.3	22.5	22.0	16.3	17
(Wise River)									
Anderson Meadow	13D14	7000	3/18	28	8.0	8.6	11.2	9.3	6
Elk Horn	13D15	8450	3/30	42	11.2	10.5	12.5	9.5	15
Wise River	13D13	6300	3/18	22	5.8	6.0	6.3	5.9	6
(Ruby River)									
Cottonwood	11E2	5900	3/10	29	9.1	N.R.**	13.2	10.5	5
Cottonwood (Up)	11E1	8400	3/10	31	9.4	N.R.**	14.6	11.4	5
Flashlight	12D3	6950	3/31	28	7.8	7.4	6.2	5.8	9
Tobacco Root	12D2	6900	3/9	24	7.3	11.7	13.6	11.9	6
Vigilante	11D1	6125	3/10	4	1.5	0.0	3.6	1.2	6

* Adjacent Basin

** No Record

MONTANA SNOW SURVEYS APRIL 1, 1954

MISSOURI BASIN DRAINAGE BASIN and SNOW COURSE	No.	Elev.	SNOW COVER MEASUREMENTS 1954 Date of Survey	Snow Depth (In.)	Water Content (In.)	Past Record Water Content (In.) 1953	1952	Average	Years of Record
MADISON RIVER									
Hebgen	11E5	6550	3/27	38	12.0	12.2	19.6	12.6	18
W. Yellowstone	11E7	6700	3/27	34	10.7	10.9	18.9	11.6	17
21-Mile	11E6	7150	3/27	61	19.6	16.8	28.6	17.2	17
*Big Springs	11E9	6500	3/29	64	24.7	21.7	34.7	21.4	18
*Island Park	11E10	3600	3/30	50	16.9	16.2	30.4	16.3	18
*Valley View	11E8	6500	3/30	47	15.4	15.6	30.0	15.5	18
Norris Basin	10E2	7500	3/30	37	11.6	N.R.**	12.7	9.4	15
GALLATIN RIVER									
Devil's Slide	10D4	8100	3/30	65	20.0	18.8	27.5	20.3	15
Hood Meadow	10D3	6600	3/30	33	8.8	7.6	13.7	8.7	15
Mystic Lake	10D2	6600	3/27	29	7.2	6.6	10.0	7.6	17
New World	10D1	6700	3/27	34	8.8	9.8	13.1	10.2	15
21-Mile	11E6	7150	3/27	61	19.6	16.8	28.6	17.2	17
MISSOURI RIVER MAIN STEM									
Crystal Lake	9C1	6100	4/4	45	14.2	10.2	16.4	12.2	13
Chessman Res	12C5	6200	4/1	19	4.8	4.5	6.7	4.8	18
Crystal Lake	9C1	6100	4/4	45	14.2	10.2	16.4	12.2	13
Grasshopper	10C2	7000	3/31	25	6.8	4.4	8.4	5.3	16
Kings Hill	10C1	7950	3/29	47	14.0	11.6	17.0	13.3	15
Picnic Grounds	13C6	6500	4/1	19	5.2	N.R.**	6.0	4.4	8
Pipestone Pass	12D1	7200	4/1	25	4.9	6.3	7.6	5.8	15
Stemple Pass	12C1	6900	3/30	46	13.2	10.4	13.4	9.8	15
Tenmile, Lower	12C2	6250	3/26	34	7.6	6.6	9.4	6.5	18
Tenmile, Middle	12C3	6800	3/26	45	11.0	11.6	3.0	10.6	18
Tenmile, Upper	12C4	8000	3/26	50	13.5	14.0	15.8	13.4	18
(Teton River)									
Fright Creek	12A1	6000	3/26	73	25.3	21.4	18.1	19.2	6
Waldron Creek	12B2	5600	3/25	34	12.0	6.2	7.2	8.2	6
West Fork	12B1	6000	3/25	62	24.8	20.6	19.6	19.9	6
(Sun River)									
Benchmark	12B8	5500	3/24	48	17.5	7.5	11.6	10.9	6
Cabin Creek	12B6	5400	4/6	41	11.9	5.8	8.2	7.5	5
5-Bull	12B9	5600	3/24	43	13.0	5.2	9.6	8.5	6
Gates Park	12B5	5300	4/5	58	19.0	8.7	12.8	11.6	5
Goat Mountain	12B7	7000	4/1	57	17.9	10.4	14.4	10.3	15
Wrong Ridge	12B3	6800	4/3	91	33.0	20.8	21.2	23.8	5
Wrong Creek	12B4	5700	4/4	73	25.4	11.7	15.6	16.1	5
(Marias River)									
Marias Pass	13A5	5250	3/31	82	28.6	16.8	20.7	17.6	18
(Milk River)									
Rocky Boy	9A1	5200	4/1	26	6.2	4.6	5.1	5.4	12
(Musselshell)									
Grasshopper	10C2	7000	3/31	25	6.8	4.4	8.4	5.3	16
Kings Hill	10C1	7950	3/29	47	14.0	11.6	17.0	13.3	15

*Adjacent Basin ** No Record

MONTANA SNOW SURVEYS APRIL 1, 1954

MISSOURI BASIN DRAINAGE BASIN and SNOW COURSE	No.	Elev.	SNOW COVER MEASUREMENTS						
			1954			Past Record			
			Date of Survey	Snow Depth (In.)	Water Content (In.)	Water Content (In.)			Years of Record
						1953	1952	Average	
UPPER YELLOWSTONE									
Camp Senia	9D1	7890	3/31	32	7.8	5.3	7.7	7.1	16
Canyon	10E3	7750	4/1	49	17.8	14.3	21.4	16.8	8
Cooke City	10D7	7400	3/28	37	10.9	8.8	11.9	7.9	17
Crevice Mt.	10D5	8400	4/1	39	9.8	9.2	14.6	10.0	19
Independence	10D6	8000	3/25	58	19.4	19.7	22.2	18.2	12
Lake Camp	10E4	7850	3/30	46	12.4	9.5	14.2	10.8	16
Lodgepole, Wyo.	9E1	8200	3/31	43	12.7	10.1	13.0	11.0	16
Lupine	10E1	7300	3/30	46	13.0	9.3	16.4	10.2	15
*Lewis Lake Div.	10E9	7000	4/1	143	52.3	45.1	52.8	42.5	35
*Aster Creek	10E8	7700	4/1	112	38.0	33.0	41.3	31.4	35
*Tom Thumb Summit	10E7	7900	4/1	84	28.0	21.1	29.6	25.1	7
(Shields River)									
Porcupine	10C3	6500	4/1	28	7.8	8.2	10.8	6.4	15
Grasshopper	10C2	7000	3/31	25	6.8	4.4	8.4	5.3	16
LOWER YELLOWSTONE (Wind River above Diversion Dam)									
Brooks Lake #3	10F2	9200	3/26	84	28.5	28.1	30.2	24.9	18
Burroughs Creek	9F6	8800	3/27	58	16.5	14.8	12.6	17.6	5
Du Noir	9F2	8750	3/26	38	9.9	8.2	7.6	10.1	13
Geyser Creek	9F3	8500	3/27	38	9.9	7.5	9.5	10.2	5
Little Warm	9F4	9500	3/27	70	20.1	18.7	19.2	22.3	5
Sheridan	9F1	7500	3/26	40	11.4	8.7	7.4	7.3	18
T-Cross Ranch	9F5	8000	3/28	38	9.5	7.0	7.9	7.4	13
*Togwotee Pass	9F1	9600		103	34.7	27.3	32.2	28.8	18
Dinwoodie	9F10	10000	3/25	52	13.9	12.7	14.5	15.8	4
Dry Creek	9F9	9500	3/25	33	7.6	6.2	7.4	8.4	4
Hobbs Park	9G2	10000	3/30	75	23.7	14.2	23.0	21.7	5
Mosquito Park	9G3	9500	3/30	45	12.3	6.8	12.2	9.4	9
St. Lawrence	9F11	9000	3/29	34	9.0	5.9	10.5	8.0	10
Trout Creek	9G1	8400	3/30	40	10.3	7.4	10.0	7.1	5
*Kendall	9F12	7900				10.1	12.0	11.5	17
*Loomis Park	10F5	8500				17.9	20.1	17.3	18
*Black Rock	10F3	8600				20.2	24.7	22.2	18
Yellow Jacket	10F5	6775	3/27	31	7.9	3.2	7.1	6.6	17

* Adjacent Basin
**No Record

MONTANA SNOW SURVEYS APRIL 1, 1954

			SNOW COVER MEASUREMENTS						
			1954			Past Record			
						Water Content (In.)			
MISSOURI BASIN DRAINAGE BASIN and SNOW COURSE	No.	Elev.	Date of Survey	Snow Depth (In.)	Water Content (In.)	1953	1952	Average	Years of Record
LOWER YELLOWSTONE (Continued)									
POPO AGIE RIVER									
Blue Ridge	8G2	9500	3/31	59	17.4	10.1	24.8	12.3	14
Grannier Meadow	8G4	9000	3/31	70	20.8	12.1	22.9	12.9	17
*Larsen Creek	9G4	9000	4/1	40	10.4	6.5	12.8	14.0	4
Sawmill Glade	8G1	8500	3/31	41	11.0	8.1	14.3	8.1	14
South Pass	8G3	9000	3/31	71	21.8	12.3	23.1	14.4	14
Mulligan Park	9G5	8900				11.9	11.7	11.0	18
*Dutch Joe	9C6	8700	4/1	41	11.9	8.0	11.0	8.4	15
BIG HORN RIVER - WYOMING									
Beavers Mill	9F8	8900	N.R.**			6.3	6.9	7.8	5
Owl Creek	8F1	8700	N.R.**			4.7	6.7	6.3	5
Timber Creek	9E2	8800	4/3	26	6.9	4.3	5.5	5.8	5
Wood River	9E7	8000	4/2	29	7.3	3.7	4.0	5.4	14
Tensleep R.S.	7E3	8200	3/31	30	5.5	6.9	10.0	7.1	17
Ranger Creek	7E1	8800	3/31	38	8.8	7.8	10.3	8.2	16
SHOSHONE RIVER									
East Entrance	10E6	7000	4/1	49	13.4	8.9	13.8	13.3	5
Sylvan Pass	10E5	7100	4/1	54	15.0	13.5	17.2	14.5	16
TONGUE RIVER									
Burgess Jct.	7E4	7900	3/29	58	20.0	13.6	12.4	13.4	4
Big Goose	7E2	7700	3/29	24	5.5	4.3	5.0	4.3	18
Dome Lake	7E5	9000	3/29	44	11.0	7.2	N.R.**	6.8	3
POWDER RIVER									
Sour Dough	6E1	8500	3/31	39	9.0	4.6	6.8	5.9	17
North Powder	7E8	8500	3/30	33	7.0	5.8	10.3	7.6	3
Soldier Park	7E6	8700	3/29	26	5.1	2.6	5.1	4.5	4
Muddy Pass	7E7	9700	3/31	41	9.4	8.0	9.9	8.6	4
CHEYENNE RIVER - SOUTH DAKOTA									
Upper Spearfish	1SD	6500	3/29	27	8.1	8.6	10.2	7.2	10
Upper Castle						Abandoned			
Deerfield						Abandoned			

* Adjacent Basin
** No Record

MONTANA SNOW SURVEYS APRIL 1, 1954

COLUMBIA BASIN DRAINAGE BASIN and SNOW COURSE	No.	Elev.	SNOW COVER MEASUREMENTS						
			1954			Past Record			
			Date of Survey	Snow Depth (In.)	Water Content (In.)	Water Content (In.)			Years of Record
						1953	1952	Average	
KOOTENAI RIVER (above Libby, Montana)									
Baree Mt.	13B1	6000	4/1	147	60.3	45.8	44.7	40.4	15
Brush Creek	14A4	5000	3/31	57	19.1	11.8	11.8	11.9	9
Fernie	Can.	3500	3/30	48	16.4	7.0	9.0	7.8	17
New Fernie	Can.	4100	3/30	69	23.8	13.7	14.6	15.0	3
Fernie Ridge	Can.	5600				25.2	24.1	24.6	2
Ferguson	Can.	3000	3/31	70	29.2	19.7	19.2	19.5	16
Kimberley	Can.	3800	3/31	39	12.1	5.0	7.3	5.4	16
Marble Canyon	Can.	5000	3/31	57	19.0	14.7	13.4	14.8	7
Nelson Creek	Can.	3050	3/31	58	23.0	17.7	17.6	14.0	16
Red Mt., Mont.	15A1	6000	3/30	74	26.8	20.0	18.2	18.5	15
Sinclair Pass	Can.	4500	3/31	38	10.3	4.3	5.4	4.9	17
Smith Creek	16A1	4800	3/31	139	60.2	53.4	44.0	42.7	15
Sullivan Mine	Can.	5100	4/1	56	19.3	14.1	16.3	15.9	8
Upper Elk River	Can.	4400	4/1	44	11.0	5.6	7.4	8.6	6
Gerrard	Can.	6000				15.9	16.2	14.3	19
Gray Creek	Can.	5100	3/31	74	22.5	16.8	19.1	20.5	6
Sandon	Can.	3500	3/31	49	18.9	15.2	12.0	11.1	16
Blue Bird	14A1	6800	4/1	122	54.0	40.2	40.4	36.2	15
Farron	Can.	4000				14.4	17.9	12.1	16
Glacier	Can.		4/3	109	39.3	NR**	NR**	22.2	14
FLATHEAD RIVER									
Blue Bird	14A1	6800	4/1	122	54.0	40.2	40.4	36.2	15
Basin Creek	13B14	5900	3/30	44	16.0	7.0	11.1	9.1	3
Big Creek	13B3	6750	3/31	109	43.1	41.7	46.9	40.8	13
Brush Creek	14A4	5000	3/31	57	19.1	11.8	11.8	11.9	9
Cattle Queen	13A1	4700	Estimate		42.5	33.2	32.5	30.7	15
Coyote Hill	13B11	4200	4/1	39	13.2	11.7	14.9	11.2	7
Desert Mountain	13A2	5600	3/26	51	18.3	13.5	18.2	15.3	15
Goat Mountain	12B7	7000	4/1	57	17.9	10.4	14.4	10.3	15
Hell Roaring Divide	1±A3	5700	4/5	102	37.9	29.2	34.3	29.9	12
Holbrook	14B13	4530	3/30	45	17.3	6.9	11.5	8.7	3
Kishenehn #2	14A2	4300	4/2	56	15.2	6.0	7.2	7.7	8
Kishenehn #3	14A6	4000	4/2	67	18.3	N.R.**	N.R.	N.R.	0
Logan Creek	14A5	4300	4/1	41	11.8	6.3	8.4	7.9	15
Marias Pass	13A5	5250	3/31	82	28.6	16.8	20.7	17.6	18
N.Frk. Jocko	13B7	6330	4/1	130	49.0	42.7	44.2	40.9	13
Quintonkon	13A13	3800	3/31	56	16.6	11.1	18.6	15.1	3
Spotted Bear Mt.	13B2	7000	3/30	54	16.8	10.2	16.0	15.8	6
Strawberry Lake	13B10	6500	4/1	104	37.8	33.1	53.6	46.5	6
Trinkus Lake	13B1	6500	4/1	120	37.9	36.3	43.3	45.0	6
Trout Lake	13A12	3600	3/28	60	18.9	13.1	17.4	18.7	6
Twin Creeks	13B11	3580	3/29	44	12.5	6.5	13.1	9.7	3
Upper Holland	13B5	7000	3/31	103	39.2	35.5	36.3	39.3	5

*Adjacent Basin
** No Record

MONTANA SNOW SURVEYS APRIL 1, 1954

COLUMBIA BASIN DRAINAGE BASIN and SNOW COURSE	No.	Elev.	SNOW COVER MEASUREMENTS						
			1954			Past Record			
			Date of Survey	Snow Depth (In.)	Water Content (In.)	Water Content (In.)			Years of Record
						1953	1952	Average	
UPPER CLARK FORK									
Coyote Hill	13B11	4200	4/1	39	13.2	11.7	14.9	11.2	7
Chessman Res.	12C5	6200	4/1	19	4.8	4.5	6.7	4.8	18
East Fork R.S.	13D1	5400	3/31	22	7.0	8.3	10.3	5.7	15
Fish Lake, Idaho	15C2	5000	3/30	117	38.3	42.4	--	--	1
Intergaard	13C4	6450	4/1	31	8.3	N.R.**	9.0	8.4	8
Lubrecht Forest#6	13C8	5400	4/1	15	4.1	1.4	5.9	3.6	3
N.Frk. Jocko	13B7	6330	4/1	130	49.0	42.7	44.2	40.9	13
Picnic Grounds	13C6	6500	4/1	19	5.2	N.R.**	6.0	4.4	8
Pipestone Pass	12D1	7200	4/1	25	4.9	6.3	7.6	5.8	15
Skalkaho Summit	13C3	7258	3/29	85	32.8	26.5	26.6	25.2	15
Slide Rock Mt.	13C2	7100	4/1	54	17.9	15.1	15.5	14.0	17
Southern Cross	13C5	6500	4/1	24	8.0	N.R.**	9.1	5.5	8
Stemple Pass	13C1	6900	3/30	46	13.7	10.4	13.4	9.8	15
Storm Lake #2	12C7	7780	3/28	50	14.8	17.0	20.5	14.8	15
Stuart Mill	13C6	6500	4/1	26	7.6	N.R.**	11.2	7.3	8
Stuart Mt.#1	13C1	7400	3/30	86	34.0	27.4	36.8	29.8	17
Tenmile, Lower	12C2	6250	3/26	34	7.6	6.6	9.4	6.5	18
Tenmile, Middle	12C3	6800	3/26	45	11.0	11.6	13.0	10.6	18
Tenmile, Upper	12C4	8000	3/26	50	13.5	14.0	15.8	13.4	18
*49 Meadows	15B10	5000	4/1	123	46.0	36.3	40.7	35.0	17
*Lookout	15B2	5250	4/1	136	50.5	33.1	39.6	33.4	17
BITTERROOT									
East Fork R.S.	13D1	5400	3/31	22	7.0	8.3	10.3	5.7	15
Gibbons Pass	13D2	7100	3/30	69	24.6	28.0	32.4	23.8	15
Nezperce Pass	14D1	6575	4/1	53	19.6	19.6	24.6	17.7	17
Nezperce Camp	14D2	5580	3/31	44	14.6	15.8	18.7	13.6	17
Skalkaho Summit	13C3	7259	3/29	85	32.8	26.5	26.6	25.2	15
Stuart Mt. #1	13C1	7400	3/30	86	34.0	27.4	36.8	29.8	17
*Moose Creek	13D16	6200	4/2	47	17.3	22.5	22.0	16.3	17
*Kit Carson	14D3	4700	4/31	24	7.9	8.1	12.0	8.0	16
*Savage Pass	14C4	6000	3/31	85	30.9	30.3	N.R.**	25.7	16
*Powell Pasture	15C3	3700	3/29	53	17.7	15.2	N.R.**	13.4	15
*Packers Meadow	14C2	5700	4/1	99	30.5	21.7	25.2	21.7	17
Shanghai Pass			3/30	72	30.5				
PEND ORIELLE									
Baree Mt.	13B1	6000	4/1	147	60.3	45.8	44.7	40.4	15
Freeze-Out Summit	15C3	7000	4/2	139	46.9	36.2	37.9	31.9	17
Hoodoo Creek	13C1	6200	4/1	173	69.0	48.1	49.2	46.6	17
Smith Creek	16A1	4800	3/31	139	60.2	53.4	44.0	42.7	15
Benton Springs	16A3	4900	4/1	64	25.1	21.7	26.8	20.5	17
Benton Meadows	16A2	2344	4/1	6	2.8	0.1	7.1	2.1	17
Bunchgrass Meadow	16A5	5000	4/1	85	33.6	30.7	30.5	29.4	14

* Adjacent Basin

** No Record

Federal - State - Private

COOPERATIVE SNOW SURVEYS

Furnishes the basic data
necessary for forecasting
water supply for irrigation,
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supply, hydro-electric power
generation, navigation,
mining and industry

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"WATER IS THE WEST'S GREATEST RESOURCE"